

Remarks begin on page 6 of this paper.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-19. (Canceled)

20. (Currently Amended) A composition ~~for ion channel transfer which comprises~~ comprising a mesenchymal stem cell incorporated with a nucleic acid which encodes a hyperpolarization activated, cyclic nucleotide gated 2 (HCN2) ion channel in an amount ~~effective~~ sufficient to create an ion channel in the cell.

21-48. (Canceled)

49. (Currently Amended) A method of expressing a functional ion channel in a syncytial structure comprising: (1) preparing the composition of claim 20; and (2) ~~administering~~ site-specifically introducing the composition to into the syncytial structure.

50. (Previously Presented) The method of claim 49, wherein the syncytial structure is a mammalian heart.

51. (Currently Amended) A method of treating a cardiac rhythm disorder in a ~~subject~~ mammal, wherein the disorder is at least one of conduction block, complete atrioventricular block, incomplete atrioventricular block or sinus node dysfunction, which ~~method~~ method comprises ~~contacting a cell of the heart of the subject with~~ site-specifically introducing into the mammal's heart the composition of claim 20 in an amount ~~effective~~ sufficient to increase pacemaker current expression ~~of the cell at the site,~~ thereby treating

the rhythm disorder in the ~~subject~~ mammal.

52-55. (Canceled)

56. (Currently Amended) The method of claim ~~55~~ 51, wherein the ~~step of administration is effected~~ composition is introduced by topical application to the cells of the ~~structure~~ heart, ~~microinjection~~ injection, or catheterization.

57. (Currently Amended) A method of inducing a pacemaker current in a ~~subject's~~ mammal's heart which comprises ~~contacting a cell of~~ site-specifically introducing into the heart with the composition of claim 20 in an amount ~~effective~~ sufficient to induce a pacemaker current in ~~the cell of~~ the heart, thereby inducing a pacemaker current in the heart.

58. (Canceled)

59. (Currently Amended) A method of inducing a pacemaker current in a cell which comprises contacting the cell with the composition of claim 20 in an amount ~~effective~~ sufficient to induce a pacemaker current in the cell, thereby inducing a pacemaker current in the cell.

60-64. (Canceled)

65. (New) A composition for delivering a pacemaker current to a syncytial structure comprising a mesenchymal stem cell incorporated with a nucleic acid which encodes a hyperpolarization activated, cyclic nucleotide gated 2 (HCN2) ion channel in an amount sufficient to create an ion channel in the cell and deliver a pacemaker current when site-specifically introduced into the syncytial structure.

66. (New) A method of inducing a pacemaker current in a mammal's heart which comprises site-specifically introducing into the heart the composition of claim 20 in an amount

sufficient to increase a pacemaker current in the heart, thereby inducing a pacemaker current in the heart.

67. (New) A method of inducing a pacemaker current in a cell which comprises contacting the cell with the composition of claim 20 in an amount sufficient to increase a pacemaker current in the cell, thereby increasing a pacemaker current in the cell.